KineticSystems Corporation

Standardized Data Acquisition and Control Systems

3988

GPIB Crate Controller

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FEATURES

- Provides an interface between a GPIB system and a CAMAC crate
- Supports data transfer rates up to 600 Kilobytes per second
- Acts as a main or auxiliary crate controller
- Meets all IEEE-488 requirements
- Supports Q-Scan, Q-Stop, and Q-Repeat block data transfers
- Contains a switch-selectable talk/listen address

APPLICATIONS

- Laboratory automation
- Process control
- CAMAC I/O in a GPIB-controlled system
- Local GPIB control of a distributed CAMAC system

GENERAL DESCRIPTION

The Model 3988 is a double-width CAMAC crate controller that acts as a device on the General Purpose Interface Bus (GPIB). This crate controller conforms to all applicable CAMAC specifications as well as those for the GPIB (IEEE Standard 488). The 3988 allows GPIB system controllers to communicate with up to 23 CAMAC I/O modules in a crate.

Two new ordering options are provided. The Model 3988-G3A uses the IEEE-488 24-contact ribbon connector, while the 3988-D3A uses the IEC (European) 25-contact "D" connector. These new options support block transfers at data rates up to 600 kilobytes per second with the actual rate limited only by the controller and/or the host computer. The 3988-G3A/D3A supercede the 3988-G2A/D2A and are software-compatible with these earlier lower speed units.

The 3988 functions as a main or auxiliary crate controller. When used as a main crate controller, it can support one or more auxiliary crate controllers. When used as an auxiliary crate controller, the 3988 shares control of the crate with the main crate controller.

The 3988 is configured at the factory as a main crate controller. It can be changed in the field to function as an auxiliary crate controller by removing plug-in resistor packages. A 40-contact, rear-panel connector is then used for the Auxiliary Controller Bus.

INTERNAL FUNCTION CODES (N = 30)

Command		Action
F(0)·A(0)	RD1	Reads Transfer Count register.
F(1)·A(0)	RD2	Reads Control/Status register.
F(1)·A(12)	RD2	Reads LAM Request register.
F(16)·A(0)	WT1	Writes Transfer Count register.
F(16)·A(1)	WT1	Writes SRQ Mask register.
F(17)·A(0)	WT2	Writes Control/Status register.
F(17)·A(13)	WT2	Writes LAM Mask register.
Note: The Invalid Transfer bit (IT) of the status byte = 0 for all valid addressed commands; IT = 1 otherwise.		
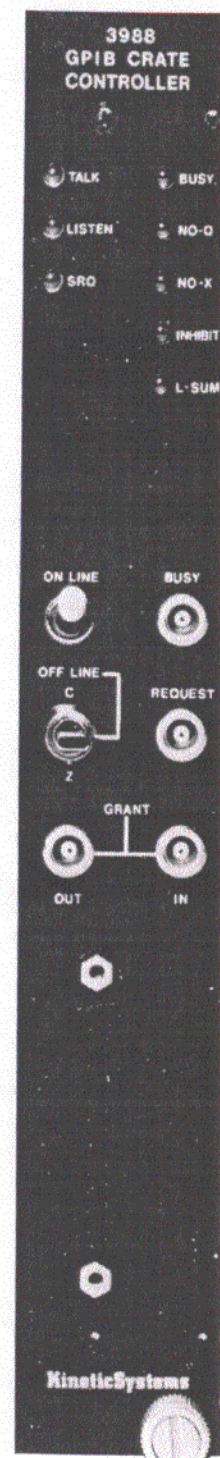
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OPERATING MODES

All command and data information are passed between the host computer and the 3988 in binary form, not ASCII characters. Read and Write data can be transferred in 8, 16, or 24 bit form (one, two, or three GPIB bytes), as set in the CSR (Control/Status Register). The various operating modes are described here:

SINGLE TRANSFERS

The Single Transfer operating mode is used to execute single CAMAC commands. The information passed to the 3988 and the response from the 3988 are indicated below:

1. **From host to 3988:** NAF (Station number, Subaddress, Function code); Write data (Write operations only).
2. **From 3988 to host:** Read data (Read operations only); status byte response (if enabled) with Q, X, and other status information.

Q-SCAN

The Q-Scan operating mode is used to transfer a block of Read or Write data between a group of modules and the GPIB host computer. The standard CAMAC Q-Scan technique per IEEE Standard 683 is used. The Function Code, initial Subaddress, and initial Station number are passed to the 3988 in binary form. For Write commands, the Write data block will follow the command information. For Read commands, the block of Read data follows. The operation is terminated by a transfer count underflow or a scan-out-of-crate (N 23) condition.

Q-STOP/STOP ON TRANSFER COUNT

This transfer mode is similar to the Q-Scan mode, except that the data transfers are to or from a single target NAF (i.e., Reading or Writing a block of memory in a module). The CAMAC command is repeated until a Q = 0 response or a transfer count underflow is reached.

Q-REPEAT

This operating mode is also used in conjunction with a single NAF. The number of valid transfers is determined by a transfer count underflow. Data is ignored (and the transfer count is not incremented) for all Dataway operations resulting in Q = 0.

SERVICE REQUEST CAPABILITY

The 3988 has full service request capability. It can issue a GPIB Service Request (SRQ) for the following conditions: Transfer Ended, CAMAC LAM (Look-at-Me), Q = 0, X = 0, On-Line, Inhibit, and Invalid Transfer. When the GPIB host responds to a Service Request, it performs a serial poll and obtains the information from the Service Request Status register in the 3988. The 24-bit LAM pattern can also be obtained by reading the LAM Request register.

POWER REQUIREMENTS

+6 volts — 3.7A

ORDERING INFORMATION

Weight: .97 kg. (2 lb. 2 oz.)

Model 3988-G3A — GPIB Crate Controller with IEEE 488-1978 (USA) Standard Connector (24-contact ribbon connector with metric hardware)

Model 3988-D3A — GPIB Crate Controller with IEC (Europe) proposed Standard Connector (25-contact "D" connector)

Accessories — Model 5843-Series Auxiliary Controller Bus Cable Assembly
Model 5864-Series GPIB Bus Cable Assemblies